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Differences In Mathematical Concepts and Knowledge in Terms of Human Gender

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Abstract
Generally in a group, especially students in a school, of course there are male and female students. Likewise at MTs Subulussalam Sumberjo Labuhanbatu Selatan (Labusel). Students at the school currently number 208 people consisting of 103 students and 105 female students. Currently there are 69 students who are at the seventh grade level. In the teaching process by the teacher, there are some tendencies in female students (female students) in understanding and receiving the transfer of knowledge. Where every year the champions are female students. Although in principle, the system and method of learning provided are the same, as well as the attendance of these students. However, there are differences that stand out in the understanding of concepts, especially mathematics and the knowledge that students have. For this reason, a study was conducted to determine the differences in understanding of mathematics concepts and mathematical knowledge. This study uses quantitative methods with data collection tools learning outcomes test on male students and female students in class VII at MTs Subulussalam Sumberjo with a total population as well as a sample of 69 people. Data collection using knowledge tests and concept understanding tests. Data analysis was carried out using the Independent Sample t test. The results showed that there was a significant difference in the understanding of mathematics concepts between male students and female students.

Keywords: *Gender, Mathematical Knowledge, Mathematical Concept Understanding*

INTRODUCTION

The word gender comes from the English word for "sex". In Webster's New World Dictionary and Women's Studies Encyclopedia cited by Sabaruddin Malik (2013), it is explained that gender is a cultural concept that seeks to make distinctions in terms of roles, behaviour, mentality, and emotional characteristics between men and women who develop in society. This opinion is in line with the opinion of feminists, such as Lindsey, who considers all the provisions of society regarding the determination of a person as male or female to be included in the field of gender studies (What a given society defines as masculine or feminine is a component of gender). Gender is a difference in sex that is not caused by biological differences and is not God's nature, a long social and cultural process (Azizah et al., 2022). Differences in behaviour between men and women, apart from being caused by biological factors, are mostly formed through social and cultural processes. Gender can be categorised as an operational tool in measuring the issues of men and women, especially those related to the division of roles in society that are constructed by society (Agustin et al., 2018).

Generally in a group, especially students in a school, of course there are male and female students. Likewise at MTs Subulussalam Sumberjo Labuhanbatu Selatan (Labusel). Students at the school currently number 208 people consisting of 103 students and 105 female students. Currently there are 69 students who are at the seventh grade level. In the teaching process by the teacher, there are some tendencies in female students (female students) in understanding and receiving the transfer of knowledge. Where every year the champions are female students

Likewise, during field observations, it was seen that female students dominate in every subject, especially in mathematics, female students who more quickly understand and succeed in solving various mathematical cases and concepts when the teacher gives problems and questions. When interviews were conducted, this was also confirmed by the teachers, at the school the superior students were dominated by female students for both general knowledge and exact (mathematics) subjects. In fact, many studies have been conducted that show that there is no difference in intelligence between men and women, such as those conducted by Tavris & Offir. (Febriyanti dan Imamuddin, 2022).

Pemu, 2017 suggests that concepts in mathematics are abstract ideas that allow us to classify (group) objects or events, and explain whether the object or event is an example or not an example of the idea. Concepts in mathematics are generally compiled from facts and previous concepts. Concept understanding in mathematics is often related to knowledge, because a person's knowledge of objects has different intensities or levels (Jati et al. 2021). From this explanation, the researcher wants to see differences in mathematics concepts and knowledge in terms of human gender (male and female students) at MTs Subulussalan Sumberjo Labuhanbatu Selatan.

METHODS

This research uses quantitative research methods. The hypothesis is comparative because this study compares the existence of mathematics concept variables in different samples, where the first hypothesis is the difference in mathematics concepts in terms of gender (male and female) at MTs Subulussalam. the research sample amounted to 69 people. Validation and Reliability Test data / t test questions have met the requirements to be carried out as research material and have been carried out Differentiating power test and difficulty test. The test results obtained by the knowledge test totalled 10 questions and the concept understanding test totalled 5 large questions which were divided into 20 small questions. Data analysis was carried out by independent t test analysis / test measured using SPSS 20.

RESULTS AND DISCUSSION

Descriptive Data Results

a) Mathematical knowledge variable

Based on the scoring results from the recap of existing knowledge scores, a descriptive test was carried out, namely

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30	2	7,7	7,7	7,7
	50	10	38,5	38,5	46,2
	60	6	23,1	23,1	69,2
	70	7	26,9	26,9	96,2
	80	1	3,8	3,8	100,0
	Total	26	100,0	100,0	

Group Statistics

	Jenis Kelamin	N	Mean	Std. Deviation	Std. Error Mean
Pengetahuan Matematika	1	26	57,31	12,184	2,390
	2	43	79,30	9,359	1,427

Figure 1. Knowledge Score by Gender

The results above show that female students with a total of 43 people who have a level of understanding of mathematical concepts in the high category there are only 7 people while 34 people are in the medium category and 2 people.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20	2	2,9	2,9	2,9
	30	7	10,1	10,1	13,0
	40	6	8,7	8,7	21,7
	50	10	14,5	14,5	36,2
	60	20	29,0	29,0	65,2
	70	17	24,6	24,6	89,9
	80	5	7,2	7,2	97,1
	90	2	2,9	2,9	100,0
	Total	69	100,0	100,0	

Figure 2. Understanding of Maths Concepts

No	Kategori	Jumlah siswa	Persentase
1	Tinggi ($X \geq 73$)	7	10.15 %
2	Sedang ($41 \leq X < 73$)	47	68.12 %
3	Rendah ($X < 41$)	15	21.73%
4	Total	69 siswa	100%

Table 1. Percentage of Mathematical Concept Understanding

Based on the independent samples test output table in the equal variances assumed section, it is known that the Sig value. (2-tailed) of 0.000 <0.05, then as the basis for decision making in the independent sample t test it can be concluded that H0 is rejected and Ha is accepted. Thus it can be concluded that there is a significant (real) difference in mathematics knowledge between male students and female students at MTs Subulusalam Sumberjo

a) Hypothesis 2 Test Comprehension

Group Statistics

	Jenis Kelamin	N	Mean	Std. Deviation	Std. Error Mean
Pemahaman Konsep	1	26	45,38	15,807	3,100
	2	43	64,65	11,619	1,772

Independent Samples Test

		Levene's Test for Equality of Variances		t--test for Equality of Means				
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std.Error Difference
Pemahaman Konsep	Equal variances assumed	6,839	,011	5,815	67	,000	19,267	3,313
	Equal variances not assumed			5,396	41,375	,000	19,267	3,571

Independent Samples Test

		t--test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
Pemahaman Konsep	Equal variances assumed	25,879	12,654
	Equal variances not assumed	26,475	12,058

Figure 3. Hypothesis Test Results

In this study, researchers wanted to see differences in understanding of mathematical concepts and mathematical knowledge in terms of human gender, namely male and female gender at MTs Subulussalam Sumberjo, Labuhanbatu Selatan Regency. According to Cixous, Tong, 2004 in GT Derana (2016), gender is defined as "the differences that appear between men and women in terms of values and behaviour". Meanwhile, according to Kristeva in Tong (2004) cited by GT Derana (2016), it is explained that gender is "a cultural concept that refers to the characteristics that distinguish between men and women both biologically, behaviourally, mentality, and social culture" (Rismayanti dan Pujiastuti, 2020). Gender is a rule or norm of behaviour related to sex in a community system, because gender is often identified with sex or sex. From several definitions of gender, it can be concluded that gender is the difference between men and women physically, biologically, culturally and emotionally but have the same rights. In understanding a concept and knowledge, especially mathematics, differences often occur (Isnaniah, 2018).

The concept in mathematics is one of the objects of direct study of mathematics which is abstract in nature besides facts, operations, and principles. Bell (Yuberta et al., 2019) suggests that concepts in mathematics are abstract ideas that allow us to classify (group) objects or

events, and explain whether the object or event is an example or not an example of the idea. So a concept is a firm rule when used to describe an object and determine whether a name/term can be used or not. For example, students who already know the concept of a circle as the position of points that are equidistant at a certain point on a flat plane, then the student has a rule that can be used to state whether an object can be called or named a circle. This is in line with what Geach stated in the same book, that someone has a concept of an object, if that person can use the term (Musyaraffah, 2016).

The results of this study can be seen based on the independent samples test output table in the equal variances assumed section, the Sig value is known (2-tailed) of 0.000 <0.05, it can be concluded that H0 is rejected and Ha is accepted. Thus it can be concluded that there is a significant difference (real) in the understanding of mathematics concepts between male students and female students at MTs Subulusssalam Sumberjo. The results of this study are in line with research conducted by Wanda Nugroho Yanuarto (2013) and refute research conducted by Eka Rachma Kurniasi (2019). Meanwhile, knowledge is the result of knowing after a person senses a certain object (Notoatmodjo, 2011). Sensing occurs through the five senses, including the human senses of sight, sense of smell, sense of hearing, sense of taste, and sense of touch. Knowledge is also defined as information that is continuously required by a person to understand experience (Potter et al, 2005). According to Notoatmodjo, S (2011) a person's knowledge of objects has different intensities or levels. Broadly divided into 5 (five) levels of knowledge, namely know (know), understand (comprehension), application (aplication), analysis (analysis) and synthesis (synthesis).

CONCLUSION

The results of this study can be seen based on the independent samples test output table in the equal variances assumed section, the Sig value is known. (2-tailed) of 0.000 <0.05, it can be concluded that H0 is rejected and Ha is accepted. Thus it can be concluded that there is a significant (real) difference in mathematics knowledge between male students and female students at MTs Subulusssalam Sumberjo.

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